

REMARKS

In the Office Action, the Examiner objected to Claim 1 because of a minor informality. In addition, the Examiner rejected Claims 1-8 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,068,131 issued to Styron et al. in view of U.S. Patent No. 6,126,014 issued to Gray et al.

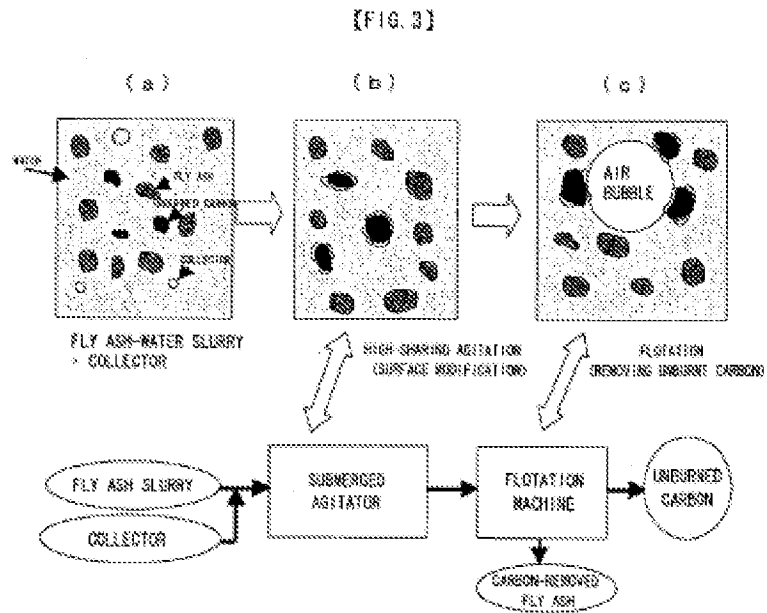
Response to 35 U.S.C. § 103(a) Rejection

In the Office Action, independent Claim 1 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of the Styron et al. reference and the Gray et al. reference. As set forth in more detail below, Applicant submits that the cited references do not teach, suggest, or make obvious all of the limitations of amended independent Claim 1, either alone or in proper combination.

1. Amended Claim 1

The amendments made to independent Claim 1 are intended to emphasize the feature of the method recited therein, which enhances the removal of unburned carbon from fly ash. More specifically, the method includes adding water to fly ash to produce a slurry. Collector is also added to the slurry. **A shearing force is applied to the slurry and the collector to modify the surface of the unburned carbon and the collector to enhance absorption of the unburned carbon to the collector.**

Applicant directs the Examiner's attention to Fig. 3 of the patent application (reproduced below) which illustrates an aspect of the carbon removal method recited in Claim 1. In particular, Fig. 3a shows the fly ash-water slurry and collector combination. It is clear from Fig. 3a that the collector is separate from the unburned carbon. Fig. 3b illustrates the effects of adding a shear force to the slurry and the collector. The surfaces of the collector and the unburned carbon are modified which allows the unburned carbon to be absorbed to the collector. Then, when performing flotation separation with a flotation machine, as shown in Fig. 3c, the unburned carbon absorbed to the collector is adhered to the air bubbles and rises together with the bubbles.



Applicant submits that the combination of references cited by the Examiner does not disclose a method including the step of applying a shear force to modify the surface of unburned carbon and collector to enhance adsorption of the unburned carbon to the collector.

2. The Cited References Do Not Disclose Applying a Shear Force to Modify the Surface of Unburned Carbon and Collector to Enhance Adsorption of the Unburned Carbon to the Collector

As understood, the Styron et al. reference relates to a method of removing carbon from fly ash by adding a biodegradable oil conditioning agent to a slurry containing raw fly ash and water. The conditioning agent renders the carbon and the fly ash hydrophobic such that upon aeration of the slurry, air bubbles attached to the carbon particles and carry them to the surface of the slurry in a form of a froth to enable removal of the carbon.

The Examiner concedes that the Styron et al. reference does not teach a submerged agitator for adding a shear force to the slurry and collector. Accordingly, the Examiner relies on the Gray et al. reference for its purported teaching of an agitating vein configured to add a shear force to the slurry and collector. The Gray et al. reference appears to teach a method of mixing fly ash with a liquid hydrocarbon to form a slurry. The slurry is then contacted with an aqueous solution, which is mixed by a mechanical mixer to disperse the hydrocarbon slurry into small droplets within the aqueous solution.

Neither of the references are understood to disclose the step of applying a shearing force to the slurry and the collector to modify the surface of the unburned carbon and the collector to enhance absorption of the unburned carbon to the collector. Rather, the Styron et al. reference discloses a method of removing carbon from fly ash through flotation only, while the Gray et al. reference merely discloses an agitation device to disperse the hydrocarbon slurry within the aqueous solution. In this regard, a person skilled in the art would not have arrived at the step of applying a shear force to a slurry and collector to modify the surface of the unburned carbon and the collector after reading the cited references.

Rather, a more likely combination would result in a method wherein the agitation device from the Gray et al. reference is added to the froth floatation method disclosed in Styron et al. to disperse the conditioning agent within the slurry containing raw fly ash and water. The Examiner's suggestion that the combination of Styron et al. and Gray et al. would produce a method including application of a shear force to modify the surface of unburned carbon and a collector is the result of impermissible hindsight, and not within the purview of one skilled in the art.

Accordingly, Applicant submits that independent Claim 1 is allowable, as are Claims 2-8 as being dependent upon an allowable base claim.

If any additional fees as due, please charge Deposit Account 19-4330.

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Customer No.: 007663

Respectfully submitted,

By: 

Mark B. Garred
Registration No. 34,823
STETINA BRUNDA GARRED & BRUCKER
75 Enterprise, Suite 250
Aliso Viejo, California 92656
Telephone: (949) 855-1246